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Impact of emotional neglect and self-silencing on body mass index and oral health behaviors: a structural equation model analysis in undergraduate students

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Abstract

Current available data indicate that parent-child relationships may prevent or promote the development of psychiatric symptoms, mainly anxiety and depressive symptoms. The aim of our study was to explore the effect of emotional neglect and self-silencing on body mass index and on oral health behaviors in a sample of first year undergraduate medical students. Smoking behavior was correlated with self-silencing among males, while individual emotional neglect questions were correlated with body investment scales and oral health behaviors. The structural equation model demonstrated a good fit among female students but not among males. Further studies should further investigate the properties of this model in different populations.

Keywords: health belief model; severity; susceptibility; benefits; barriers; oral health behaviors

1. Introduction

The literature reveals significant correlations between parental bonding and psychiatric symptoms in adulthood (e.g. anxiety, depression): affective enhancement (affectional bonds) and low control (encouragement of autonomy)

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in the parent-child relationship has a protective effect, whereas those relationships characterized by affective impoverishment (neglectful relationships) and overprotection (intrusive behavior) seem to represent risk factors (Lima, Mello, & Mari Jde, 2010).

Child abuse has been associated with poorer physical health in adulthood, with ischemic heart disease, obesity, diabetes, liver disease, migraine, increased prevalence of lifetime mood, anxiety (Dong et al., 2004; Tietjen et al., 2010; Gunstad et al., 2006), as well as risks of associated health behaviors: binge eating disorder and night eating syndrome (Grilo & Masheb, 2001), alcohol consumption (Anda et al., 2002), smoking (Anda et al., 1999), risky sexual behaviors (Rodgers et al., 2004), including externalizing and internalizing problems (Egeland, Sroufe, & Erickson, 1983). Moreover, a history of trauma, such as sexual, physical and emotional abuse and neglect, appears to be significantly associated with elevated dental fear, although multiple factors play a major role in the establishment and maintenance of these phobias (Walker, Milgrom, Weinstein, Getz, & Richardson, 1996).

As the mechanisms linking emotional and neglectful childhood experiences (adversities) to adult oral health are unclear, this study tested the following hypotheses: (a) emotional neglect and self-silencing predicts body investment, (b) body investment predicts oral health behaviours and body mass index, (c) body investment predicts body mass index, (d) self-silencing is associated with smoking behaviour, (e) gender differences for the mediation model are considered. The relation between oral health behaviours, emotional neglect and self-slencing was hypothesized to be greatest for the girls in the sample.

2. Material and methods

2.1. Sample

The participants of this descriptive, correlational, cross-sectional study were 155 first-year undergraduate students at the Faculty of General Medicine, University of Medicine and Pharmacy “Carol Davila”, Bucharest, who were invited to participate in this survey at the beginning the 2011-2012 academic year. Upon entry, all participants gave written informed consent for their participation. The study was conducted in full accordance with established ethical principles (World Medical Association Declaration of Helsinki, version VI, 2002).

2.2. Instruments and measures

A structured, anonymous questionnaire was specifically developed for this study and addressed the following: (1) socio-demographic factors (age, gender, smoking); (2) oral health habits (toothbrushing, flossing, mouthrinse frequency, dental visiting frequency and reason). In aim to measure emotional neglect, we used Emotional neglect subscale (EN-S) from the Childhood Trauma Questionnaire (CTQ; Bernstein et al., 2003) a standardized, retrospective 28-item self-report inventory that measures the severity of different types of childhood trauma, producing five clinical subscales each comprised of five items. The construct of self-silencing was measured with the Silencing the Self Scale (Jack & Dill, 1992). The Silencing the Self Scale (SS-S) consists of 31 statements describing behavior and beliefs about oneself in relationship to others. Body Investment Scale (BIS) (Orbach & Mikulincer, 1998) consists of four factors with six items in each factor Totaling 24 items. Internal consistencies for the EN-S, SS-S, BIS scales in the present sample the Cronbach’s apha were 0.85, 0.81 and respectively, 0.72

2.3. Statistical analysis

Descriptive statistics and statistical analyses were performed with computerized statistical package (SPSS 17.0, Inc., Chicago, USA) software. The internal consistency of the psychological scales was examined using Cronbach's α. Analysis by independent *t*-test was used for comparing the means of interval level data. To investigate a possible relation between variables, the Pearson’s linear correlation coefficients were calculated. All reported *P*-values are two-tailed; moreover, those *P*-values less than 0.05 were considered statistically significant. Structural Equation Modelling Analysis (SEMA) was carried out using AMOS 7.0 (SPSS, Inc., Chicago, USA).

3. Results

3.1. Preliminary analysis

No significant differences were observed between males and females regarding emotional neglect (9.97±4.54 vs. 9.18±4.06), silencing-the-self (156.12±18.41 vs. 152.70±20.26) and body investment levels (3.91±0.37 vs. 3.88±0.37) (*P>0.05*). However, males showed a higher Body Mass Index (23.27±3.41 vs. 19.94±2.09, *P<0.0001*) and smoked more frequently than girls (46.2% vs. 20.4%, *P=0.008*) Smoking behavior was correlated with self-silencing among males (r = -0.29, *P<0.05*), but not among females (r = -0.11, *P>0.05*).

3.2. Emotional Neglect Scale analysis

In males, Item 2 of the Emotional Neglect scale ("I felt loved") significantly correlated with Self-silencing scale (r = 0.33, *P*<0.05) and with flossing frequency (r = -0.32, *P*<0.05), while Item 5 ("My family was a source of strength and support") (r = -0.35, *P*<0.05) correlated with dental visit frequency. In females, total Emotional Neglect scale as well as individual items was correlated with body investment scales, oral health behaviors and Body Mass Index (Table 1). Items with the strongest relationship to body investment were: (Item 1) "There was someone in my family who helped me feel important or special" (*P*<0.01) and (Item 2) "I felt loved" (*P*<0.01).

Table 1. Association of Self-silencing (SS-S), Body investment (BIS), Oral health behaviors, Smoking status and Body Mass index (BMI) with Emotional Neglect (EN) scale and items in females (*: *P<0.05*; **: *P<0.001*)

Emotional neglect	Mean (SD)	SS-S	BIS	Toothbrushing frequency	Flossing frequency	Mouthrinse frequency	Dental visits frequency	Reasons for dental visits	Smoking status	BMI
Item 1	1.83 (1.04)	-0.002	-0.26**	0.14	-0.09	0.05	0.14	-0.11	-0.11	0.26**
Item 2	1.67 (0.81)	0.04	-0.41***	0.21*	-0.09	0.03	0.10	-0.13	-0.03	0.27**
Item 3	1.88 (1.03)	-0.09	-0.13	0.15	-0.04	0.06	0.08	-0.21*	-0.09	0.09
Item 4	2.02 (1.09)	0.005	-0.17	0.11	0.02	0.05	0.05	-0.16	-0.03	0.10
Item 5	1.75 (0.99)	-0.02	-0.19**	0.26**	0.11	0.05	0.11	0.01	-0.01	0.12
EM-S	4.06 (0.40)	-0.02	-0.27**	0.21*	-0.02	0.06	0.12	-0.15	-0.07	0.21*

Individuals with high neglect level (cut off 11) reveled lower toothbrushing and dental visits frequency (*P*<0.05) and lower levels of Body investment scales (*P* < 0.001) compared with the rest of the study group. Further, subjects were divided into quartiles based on their values on the items of the EN scale. Participants in the lowest quartile of the first two items compared to those in the highest quartile reported better oral health status (*P*<0.0001), less dental pain (*P*<0.05), higher toothbrusing and mouthrinse frequency (*P* = 0.02, respectively, *P* = 0.04) and scored statistically significant higher on body investment scale (*P*<0.0001).

3.3. Structural equation modeling

We used structural equation modeling to examine the inter-relationships amongst these factors based on the hypothesis. The initial model (Fig. 1) was verified using the AMOS technique. Modifications of the model were

made, based on an inspection of the analysis of the initial model and the final model was constructed. The final model was well fitted in the all study sample (χ^2 = 8.9 (d.f. = 0, *P* = 0.610), GFI = 0.985, AGFI = 0.964, CFI = 1.000, RMSEA = 0.000, TLI = 1.195). The model demonstrated a good fit among female students (χ^2 = 10.633 (d.f. = 9, *P* = 0.394), GFI = 0.972, AGFI = 0.934, CFI = 0.978, RMSEA = 0.023, TLI = 0.964) (Fig. 2) but not among males (χ^2 = 13.982 (d.f. = 9, *P* = 0.123), GFI = 0.923, AGFI = 0.820, CFI = 0.164, RMSEA = 0.110, TLI = 0.393).

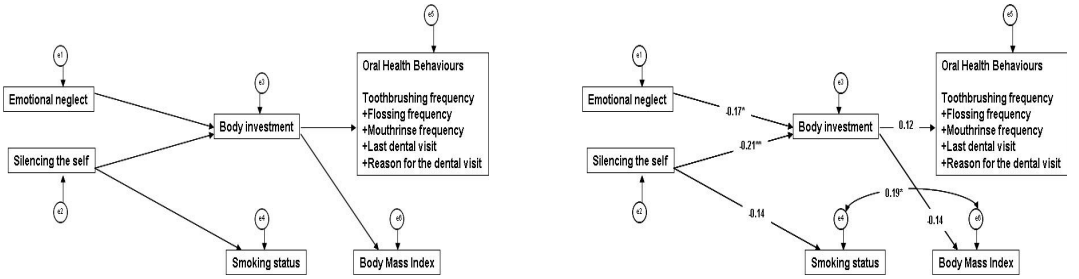

Fig. 1. (a) The first unifying hypothesis to explain the inter-relationships between oral health behaviours variables, emotional neglect, emotional autonomy and self-silencing; (b) Path analysis model in the all sample. The variance (r^2) of each factor was explained by its relationships with other factors, which may interact amongst themselves. The strength of the relationship between two factors is indicated by the path coefficients, the significance of which is indicated by an asterisk (*:*P*<0.05, **:*P*<0.01). Circles labelled with e1-e9 indicate measurement error of corresponding observed variables. Single-head arrows indicate hypothesised causal directions. Double-headed arrows indicate non-directional associations. Numbers adjunct to arrows are standardised direct effect. *$P < 0.05$, **$P < 0.01$, ***$P < 0.001$.

4. Discussion

Our study revealed the importance of body investment linking emotional neglect, self-silencing, body mass index and oral health behaviors. Childhood neglect led to reduced self-esteem (Sesar, Zivcić-Bećirević, & Sesar, 2008), self-esteem that makes a unique significant contribution to body image feelings and attitudes, touch comfort, and body care (Philips, Pinto, & Jain, 2004). Moreover, both self-liking and self-competence were significantly associated with body investment (Dumitrescu, Toma, & Lascu, 2009). Several studies have shown that oral health status and behaviors are associated with self-esteem (Kneckt, Keinanen-Kiukaanniemi, Knuuttila, & Syrjala, 2001; Regis, Macgregor, & Balding, 1994). Toothbrushing frequency and the proportions of subjects brushing to make their teeth feel clean increased with increasing self-esteem; recent and distant visits to the dentist were associated with low self-esteem (Regis et al., 1994; Macgregor & Balding, 1991). Kneckt et al. (2001) showed that high self-esteem was related to good adherence to exercise recommendations and an ability to adjust one's own insulin dosage. Correspondingly, there was evidence that self-esteem was associated with high a frequency of tooth brushing.

The present results also agrees with findings from previous studies which indicated the impact of severity of childhood abuse and neglect and adult obesity (Pederson & Wilson, 2009) and thereby increase the risk for type 2 diabetes (Thomas, Hyppönen, & Power, 2008). In the light of these findings, it is not surprising that emotional neglect and body investment are related to variables reported in this paper: oral health behaviours and body mass index.

Our results also confirm the gender differences reported in the literature for the emotional consequences of maltreatment, as girls have been found to exhibit more shame and internalizing problems and boys more aggression (Alessandri & Lewis, 1996). Further studies should further investigate the properties of this model in different populations.

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